

valves, is not destroyed by the surgical implantation technique, or are implanted into the human body, in this case into the recipient heart, in the shortest possible operation time after the completed coating, so that the applied cells do not already
5 begin to die off before the successful completion of the trans-plantation.

6 SUMMARY OF THE INVENTION

An object of the invention is to develop a method of the above initially described type in such a manner so that it is ensured that artificial or biological organ parts, especially those that have been subjected to a cell coating before the implantation, can be inserted into the recipient organ in a short time and in an irritation-free manner to the extent possible. Moreover, it is an object of the invention, to provide an apparatus for carry-
10 ing out a method of this type.

The invention achieves the first object by a method in which the
15 implant is provided with an adapter element, a receiver element adapted or matched to the adapter element is sutured together with the recipient organ, and the adapter element is connected with the receiver element. The further object is achieved ac-
20 cording to the invention by an apparatus, in which both the receiver element as well as the adapter element are embodied with a ring shape and are respectively provided with a flange-like shoulder or projection.

In an advantageous further development of the invention, it is
25 provided in this context, that the connection of adapter element

and receiver element is achieved via a fastener, that is embodied as a bayonet lock and essentially only requires a rotation or turning. Moreover, this fastener is equipped with self-locking guide elements in an advantageous embodiment of the invention.

5 Therewith the invention has the advantage, that the elements that are to be connected with one another cannot be loosened or released from one another in an automatic or self-acting manner, also in connection with a pulsating internal pressure, as it exists in connection with the heart. By means of elastic seal edges, a sufficient seal to the inside and to the outside is ensured simultaneously. On the other hand, a loosening or releasing of the connection is also still possible after several years of installed use, as the case may be, with the aid of a specially fitted disassembly tool. Thereby it is possible to fabricate the adapter element as well as the receiver element of a sterilizable body-compatible synthetic material. Finally, the adapter element provided in the apparatus according to the invention has the advantage that it can, without problems, be coated with living cells, together with the organ part that is to be
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20 implanted, preferably a biological as well as artificial heart valve, in the apparatus described in the German Patent 198 34 396 C1.

6 BRIEF DESCRIPTION OF THE DRAWING

In the following, the invention shall be described in further detail in connection with an example embodiment illustrated as
25 a general principle in the drawing. Therein:

Fig. 1 shows a top plan view onto a receiver element,

Fig. 2 shows the element according to Fig. 1 in a partially sectioned side illustration,

Fig. 3 shows an enlarged detail illustration III of the arrangement according to Fig. 2,

Fig. 4 shows a partially sectioned side illustration of an adapter element,

Fig. 5 shows an enlarged detail illustration V of the arrangement according to Fig. 4, and

Fig. 6 shows an enlarged detail illustration of the threading in the screwed-together position.

The receiver element 1 illustrated in the Figures 1 to 3 essentially consists of a ring that is provided with a flange-like shoulder or projection 2 and that has a threading 3 on its outer surface. In the presently illustrated example embodiment, in which the receiver element 1 serves for the implantation of an artificial heart valve, this ring, with an outer diameter of 29 mm and a width of about 3 mm, comprises a four-fold sharp V-thread with a pitch of 8 mm and a web width of 1 mm. In the presently illustrated example embodiment, the web height amounts to 0.5 mm. The flange 2 is provided with a set of bored through holes 4, which comprise a diameter of 0.4 mm in the presently

illustrated example embodiment, and which serve for the suturing with the recipient organ, in this case the recipient heart.

The adapter element 5 illustrated in the Figures 4 and 5 is similarly embodied as a ring with a flange-like shoulder or projection 6, whereby the flange is again provided with bored holes 7. In its interior, the adapter element 5 is provided with an internal threading 8, of which the dimensions are adapted or matched to the external threading of the receiver element 1. Both elements 1 and 5 consist of a sterilizable body-compatible synthetic or plastic.

In connection with the insertion of an artificial heart valve, before the actual operation, this valve is first connected with the adapter element 5, in this case being sutured together, and together with the adapter element is coated on the surface with living cells in an apparatus especially embodied for this purpose. Then, for beginning the transplantation operation, first the receiver element 1 is sutured into the heart, and in the following step the coated combination of heart valve and adapter element 5 is inserted into the receiver element 1, and both components are mechanically securely connected with one another by relative rotation or turning by about 30 angular degrees.